REMARKS

Applicants acknowledge with appreciation the indication of allowable subject matter in that claims 5, 16, 20, 21, 27, 34-37 and 39 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. For the present time these claims have not been rewritten as it is believed that all of the claims present in the application are clearly patentable over the references of record.

Applicants have amended claim 37 to correct the dependency from 35 to claim 36, thereby obviating the rejection under 35 USC 112 by providing sufficient antecedent basis for the claimed subject matter. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 1, 3, 4, 7, 8, 23, 24, 29, 30, 32, 33 and 38 under 35 U.S.C. 102(b) as being anticipated by Kwasnick et al. has been carefully considered but is most respectfully traversed. The rejection of claims 1, 3, 4, 7-12, 23, 24, 29, 30, 32, 33 and 38 under 35 U.S.C. 103(a) as being unpatentable over Kwasnick et al. in view of Schellenberg and the rejection 2, 13-15, 17-19, 22, 23, 25, 26, 28, 30-33 and 38 under 35 U.S.C. 103(a) as being unpatentable over Kwasnick et al. in view of Schellenberg as applied to claims 1, 3, 4, 7-12, 23, 24, 29, 30, 32, 33 and 38 above, and further in view of GB 1,092,797 have been carefully considered but are most respectfully traversed.

With respect to the anticipation rejection, Applicants wish to direct the Examiner's attention to MPEP § 2131 which states that to anticipate a claim, the reference must teach every element of the claim.

> "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). The elements must be arranged as required by the

> claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed.Cir. 1990).

According to the Official Action, Kwasnick teaches a radiation imager comprising a scintillator mated with a photodetector array. The scintillator may be caesium iodide or alternatively any other known scintillating material. A desiccant, such as silica gel is formed around the scintillation material to provide moisture protection for the scintillator. A photodetector array is optically coupled adjacent to the scintillator and further connected to a processing circuit which processes electrical signals for use in display and analysis equipment.

Applicants most respectfully submit that this reference does not anticipate the claimed invention as it does not define each of the claimed limitations required by the claims of the present invention. In particular, claim 1 of the present application concerns a hygroscopic scintillator element suitable for a selective response to tritiated water vapour and other hydrophilic tritiated species in a gas, which scintillator comprises a solid scintillator material having a layer of hygroscopic material thereon. The disclosure in Kwasnick provides a sealed scintillation detector, in which it is mentioned that a desiccant may be "disposed within said sealed chamber". The desiccant is intended to prevent a small, unavoidable defusion of moisture through the seal from destroying the scintillator which is typically deliquescent caesium iodide. In the description it is stated that "desiccant 60 is typically in the form of a powder with particles having diameters around 100 microns". On the diagram it is shown as a packing around the inside of the sealing ring.

As the Examiner will be aware, a desiccant is a drying agent and not a hygroscopic material in the sense of the presently claimed invention. It is clear from the description in Kwasnick that the desiccant is provided so as to keep the scintillating chamber dry. By contrast, however, the scintillator of the present invention includes a thin layer of a wet hygroscopic material which stays in equilibrium with the moisture content of the passing moist gas and has no drying action whatsoever. It could never be described as a desiccant and this word is never used throughout the patent application.

Furthermore, the arrangement in Kwasnick could never function as a scintillation monitor for tritiated water vapour and gas. Firstly, it would never be selective for a tritiated water vapour. It is important to note that the average range of tritium beta emissions in silica gel or other desiccant material is less than a micron. In the diagram of Kwasnick's preferred embodiment, the desiccant is shown separated from the main body of the scintillator around the inside of the sealing ring so no significant number of tritium beta emissions from tritiated water absorbed in the desiccant would reach the scintillator. Even if Kwasnic departed from his preferred embodiment and mixed desiccant powder with a divided scintillator, almost no tritium radiation would escape a 100 micron sized desiccant particle.

Furthermore, Kwasnick's desiccant absorbs water irreversibly, whereas the hygroscopic layer of the present invention stays in equilibrium with the passing moist gas continually absorbing and desorbing reversibly.

If moist gas flowed through Kwasnick's detector, it would never be able to function as a detector in accordance with the present invention. According to Kwasnick, the desiccant is only necessary because the scintillator is sensitive to degradation by water vapour. During passage of a moist gas, the desiccant will soon become saturated and then the scintillator will be permanently damaged. This is particularly evident from the fact that the preferred embodiment in Kwasnick's scintillator element is caesium iodide. This reacts with water vapour at a much lower water partial pressure than can be achieved with the silica gel desiccant he proposes so that the desiccant will not protect the scintillator. Therefore, for the above reasons it can never be the case that the scintillator element of Kwasnick would anticipate the claims of the present invention and therefore it is respectfully requested that this rejection be withdrawn.

The Official Action also considers the subject matter of claims 1, 3, 4, 7 to 12, 23, 24, 29, 30, 32, 33 and 38 to be unpatentable over Kwasnick et al in view of Schellenberg on the grounds of obviousness under 35 USC 103(a). This rejection has been carefully considered but is most respectfully traversed.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to

modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

According to the Official Action, it would be obvious to one of ordinary skill in the art to combine the features in Kwasnick with that of Schellenberg and in particular it would be obvious to one skilled in the art to incorporate a detergent material into the scintillator of Kwasnick to improve their wetability. However, there are no reasons to make these modifications other than Applicants' own teaching which may not be used as a teaching reference. In re Fritch, 23 USPQ 1780, 1784(Fed Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps.).

As mentioned in Applicants' previous response, Schellenberg proposes to replace the traditional method of detecting chemicals containing C^{14} of H^3 which have been soaked up or scraped on to strips of paper or a similar carrier. In the traditional method, the disposable sampler is soaked in liquid scintillation solution to release the contents; the liquid scintillation solution is next put in a liquid scintillation spectrometer to measure how much radioactive substance has eluted from the carrier. Schellenberg modifies this process by applying scintillating chemicals to the carrier and then puts the modified carrier into a liquid scintillation spectrometer.

As Applicants' previous response noted, there are fundamental differences between the contents of Schellenberg and that of the present invention and this was appreciated by the Examiner by virtue of the fact that the previous rejections were withdrawn. Schellenberg's carrier is merely a one off disposable strip impregnated with

the radioactive substance which is in complete contrast to the hygroscopic scintillator of the present invention which is a permanent monitor which can be reused. In view of the aforementioned comments in relation to Kwasnick there would never be any motivation to the skilled practitioner to combine the features disclosed in either of these documents and even if there were it would never result in the hygroscopic scintillator element of the present invention. In light of the fact that a skilled practitioner would never combine these two documents and such a combination would not result in a scintillator according to the present invention, it would never be apparent to combine the features of Kwasnick and Schellenberg with those of the disclosure in Atomic Energy '797. Accordingly, it is most respectfully requested that these rejections be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,

BACON & THOMAS, PLLC

By: Richard E. Fichter
Richard E. Fichter
Registration No. 26,382

625 Slaters Lane, 4th Fl.
Alexandria, Virginia 22314
Phone: (703) 683-0500
Facsimile: (703) 683-1080

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Marked-Up Version of Changes Made

IN THE CLAIMS:

Please replace claim 37 with the following amended claim.

37(Twice Amended). Apparatus according to claim [35] 36 wherein said sealed radiation monitor is substantially identical to the scintillator and sealed in a container free of radioactive gas.